

Work Order ID 62154

Friday, September 17, 2010 1:40:29 PM



Page 1

Item ID: D412-664-203

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 9/17/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 9/30/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: *M*

Date: 10/9/17

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D412-664-243	E

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D412-664-203 CHG 006

Handwritten signature BG 10-10-20

110

0.00



Packaging

Packaging

Memo

0.00

Packaging

Handwritten signature DP

10-9-30

120

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D412-664-243 using CNC bender program 412-aft and Folio FT010

Handwritten signature DP

10-9-30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Customer:



Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130  QC Quality Control	QC15- Crosstube Dimensional Check Memo	0.00 0.00				1			1005-30
140  Crosstubes Crosstubes	Crosstubes Memo 1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551 and drill table DT8577 using #9 holes as per QSI 10 to install towers. 2-Ream hole to finish size in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes. 3-SCRIBE PART # & BATCH # 4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243	0.00 0.00				①			

BR
SAD
10-01-05

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Customer:




Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150  HandFXtube Hand Finishing Crosstubes	Crosstubes Chemical Conversion Memo	0.00 0.00		SAD 10-10-05		①			
160  QC Quality Control	QC3- Inspect Part Finish Memo	0.00 0.00		8 10/10/05					
170  QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00		8 10/10/05		②			

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Start Date: 9/17/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 9/30/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

0.00



SprayPaint

SprayPaint

0.00

Spray Painting

Memo1-Prime inside and outside crosstube as per QSI 005 4.2
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 9:00Finish Time: 10:00

PAINT:

Start Time: 2:00Finish Time: 3:0010 . 10 . 07 0

220

0.00



QC14- Inspect Spray Paint

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

1 10 08

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 62154

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Required Date: 9/30/2010 Req'd Qty: 1.00

Reference:

Cust Item ID:

Customer:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

Assemble as per Dwg D412-664-203

1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

2-Install supports with magnobond as per QSI 015 Adhere for for 12 Hrs

A/R 6398 Magnobond Batch: 114158
Expiry Date: 11-07-01

3-Install clamps as per Dwg D212-664-203 using installation jig DT9024 with 0.010 thick brass shims on both chafing shield (D3189-1). Torque clamps to 80-100 in lb.

AT 10-10-13 x1

240

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

S101014

(16)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D412-664-203 PAR #: N/A Fault Category: crosshairs NCR: Yes No DQA: 10 Date: 10.11.08
 Resolution: acceptable Disposition: use as is QA: N/C Closed: 10/11/08 Date: 10/11/08

NCR: <u>62154</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10/10/08	230	Found @ inspection that the center support is off by 1/16" off center. AC moved when clamping after installing magnet Process.		→ remove center support + clean / remove all magnetism → repair center support → scaffold with 320 mesh in center of tube. → re print + paint as per QSZ 005				S 10/10/08
								S 10/10/08
			OSI-12	→ Reinstall center support as per Diag. Magnetism B4 exp			OSI-12	S 10/10/08

NOTE: Date & initial all entries

ACCEPTABLE
OFF CENTER TSY ≈ 0.030"
ACCEPTABLE 10.11.08

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Item ID: D412-664-203

Accept



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Revision ID:

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Item Name: Crosstube Aft

Start Date: 9/17/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 9/30/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	Pick Kit	0.00							
Packaging	Memo	0.00							
Packaging									
260	QC4- 100% Inspect kits for completeness	0.00							
QC	Memo	0.00							
Quality Control									
270	Packaging	0.00							
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D412-664-203 *****Ensure tube is not packaged if curing time is less than 12 hrs, see step 27 for application time & date ***** Time & date of packaging: <u>rev 11</u> Location: _____								

Perp/20 (U)

1 *10/02/1*
WAS missing reel decal yesterday

Perp/21 (U)

Work Order ID 62154

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Item ID: D412-664-203

Accept



Setup Start



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Stop



Item Name: Crosstube Aft

Start Date: 9/17/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 9/30/2010 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/10/22 *[Signature]*
MP
10-10-21

Picklist Print

Friday, September 17, 2010 1:40:34 PM

Page 1

Work Order ID: 62154

Parent Item: D412-664-203

Parent Item Name: Crosstube Aft



Start Date: 9/17/2010

Required Date: 9/30/2010

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:E 04.02.16 Reformat; Added D3189-1 K/DS
 IPP Rev:F 06-03-29 Remove Coments on Pick List JLM
 IPP Rev:G 06.12.08 per ECN 886 EC
 IPP Rev:H 07-04-30 As per Rev D JLM
 IPP Rev:I 08-06-12 add comment in seq. 21 DD verified by:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D412-664-203TRN 		Manufactured	No			110	Each	2.0000	1	1			
Crosstube Turning Detail													

Location Loc Qty Loc Code

LG 2
 60925 1
 60926 1

D2856-600 		Manufactured	No			230	f	162.7491	1.76	1.76			
Abrasion Strip													

Location Loc Qty Loc Code

ST 0.48
 37668 0.48
 ST403 162.2691
 25656 1.25
 26650 2.5
 37668 158.5191

D2896-1 		Manufactured	No			230	Each	21.0000	1	1			
Support													

Location Loc Qty Loc Code

LG 21
 47820 13
 58356 8

SAD 10-09-30

10-10-13

x 1.76

10-10-13

x 1

Picklist Print

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Work Order ID: 62154



Parent Item: D412-664-203



Parent Item Name: Crosstube Aft

Start Date: 9/17/2010

Required Date: 9/30/2010

Start Qty: 1.00

Required Qty: 1.00

D3189-1 Manufactured No

230

Each

26.0000

2

2



Chafing Shield



ET 10-10-13

Location

Loc Qty

Loc Code

FG

2

36065

2

LG

24

56353

4

58960

20

x2

D3595-063-570 Manufactured No

230

Each

12.0000

4



RUBBER CUSHION



x2

ET 10-10-13

Location

Loc Qty

Loc Code

FG

4

37971

4

LG

8

45509

8

x2

MS21920-28 Purchased No

230

Each

65.0000

4

4



Clamp(per MIL-DTL-8783C)



ET 10-10-13

Location

Loc Qty

Loc Code

FG

5

105884

5

LG

60

112863

12

114749

48

x4

Picklist Print

Page 3

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Work Order ID: 62154

Parent Item: D412-664-203

Parent Item Name: Crosstube Aft

Start Date: 9/17/2010

Required Date: 9/30/2010

Start Qty: 1.00

Required Qty: 1.00

MS21920-30

Purchased

No

230

Each

110.0000

2

2



clamp(per MIL-DTL-8783C)



25 10-10-13

Location

Loc Qty

Loc Code

LG

110

109181

36

111258

50

112772

24

x 2

AN6-40A

Purchased

No

250

Each

87.0000

4

4



Bolt



Location

Loc Qty

Loc Code

ST343

87

112828

1

114283

26

115300

60

M114283 -

AN6-41A

Purchased

No

250

Each

62.0000

2

2



Bolt



Location

Loc Qty

Loc Code

ST344

62

113288

32

115316

30

M113288 -

AN9603D016

NAS1149D0663J

Purchased

No

250

Each

0.0000

18

18



Washer



M115688

10/10/10 (2)

Friday, September 17, 2010 1:40:34 PM

Shop Packet Print

Page 3

Picklist Print

Page 4

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Work Order ID: 62154



Parent Item: D412-664-203



Parent Item Name: Crosstube Aft

Start Date: 9/17/2010

Required Date: 9/30/2010

Start Qty: 1.00

Required Qty: 1.00

MS21042L6

Purchased

No

250

Each

268.0000

6

6



Nut

Curly 9/20 ①

Location

Loc Qty

Loc Code

ST300

268

111578

4

114495

64

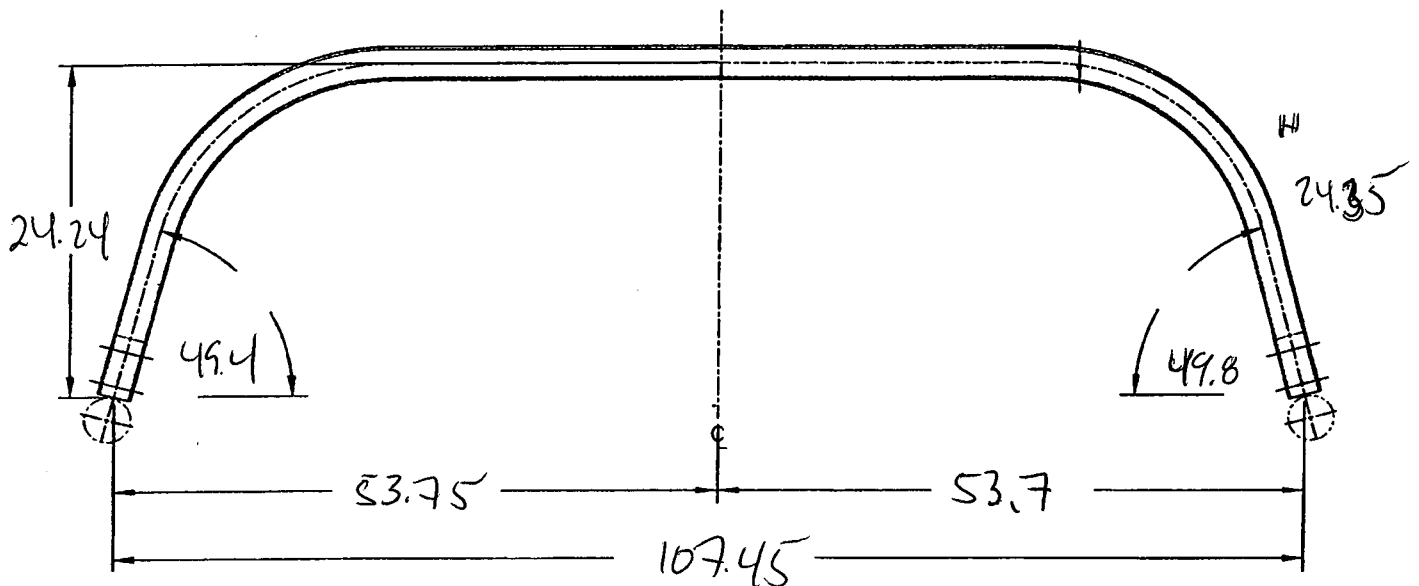
115300

200

1114495

DART AEROSPACE LTD		Work Order: 6213312
Description: Crosstube High Aft (412)		Part Number: D412-664-203
Inspection Dwg: D412-664-243 Rev: E		Page 1 of 1

Required Dimension	Min	Max
Height	24.24	24.50
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments

QC15 Inspection	<i>[Signature]</i>
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. D	KJ/JLM	
C	10.02.02	Dwg Rev updated	KJ	<i>[Signature]</i>

Item	Qty	Part Number	Description
	-243		
1	X	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
2	1	D6009-129	CROSSTUBE
3	2	D3595-063-570	RUBBER CUSHION
4	1	D2896-1	SUPPORT
5	2	D3189-1	CHAFING SHIELD
6	2	D2856-600-1009	ABRASION STRIP
7	4	MS21920-28	CLAMP
8	2	MS21920-30	CLAMP (OR MS21920-32)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

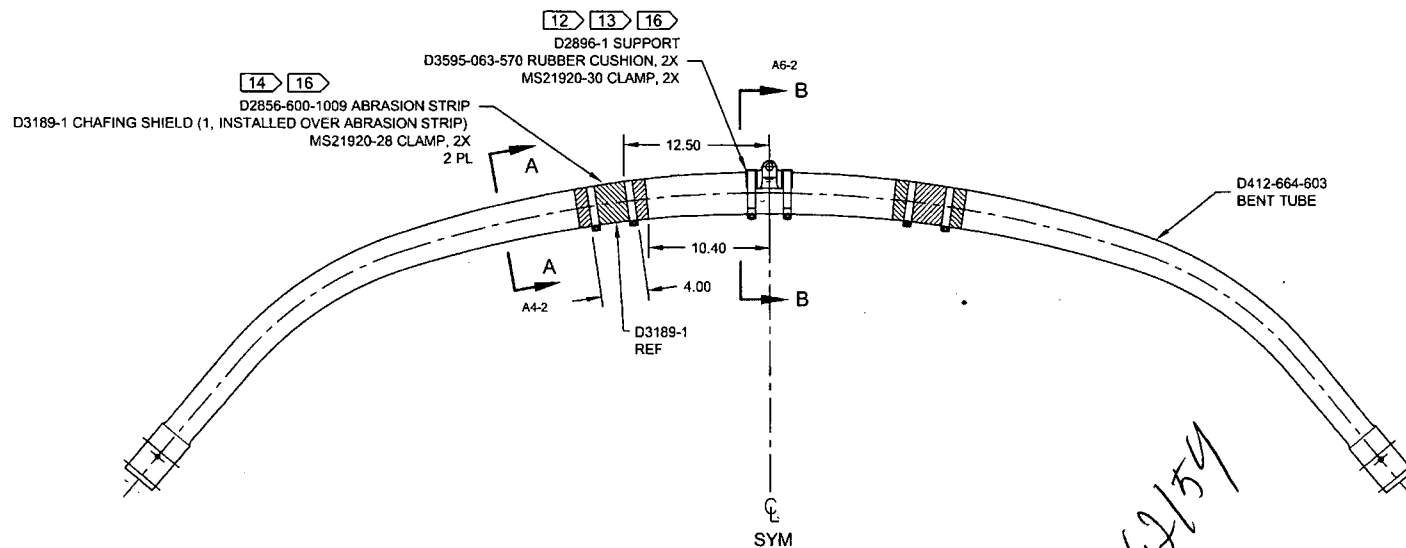
- MATERIAL: MANUFACTURED FROM D6009-129
FINISHED LENGTH = 124.100±0.020 (BEFORE BENDING/TRIMMING)
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 47.0 lbs (PER IIN-D212-664)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHAW-WAY
ELECTRO-TECHNICAL
UNCONTAMINATED
SUBJECT TO
WITH
W.C. 213-4
NO. 6213-4
Bldg 917

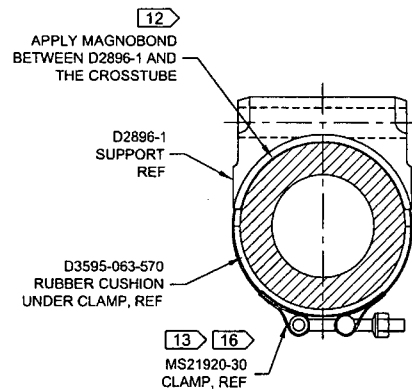
RELEASED
2009-10-29

E	REFORMAT/REVISE GENERAL NOTES; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); ADD TOLERANCE (ZN B6-3, C4-3, C8-3 & C5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	09.09.30
D	REMOVE D2732-058, CHANGE TO D3595-063-570	PH	07.03.09
C	REMOVE D2856-600-1087, ADD D2732-058 & MAGNOBOND 6398, MS21920-32 WAS MS21920-30	MB	06.10.27
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	01.10.17
REV.	DESCRIPTION	BY	DATE
DESIGN		PH	
DRAWN		RF	
CHECKED		PH	
MFG. APPR.		PH	
APPROVED		PH	
DE APPR.		PH	
DATE	09.09.30		

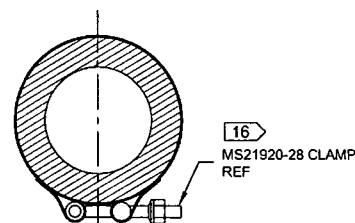
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D412-664-243	REV. E SHEET 1 OF 4
TITLE CROSSTUBE ASSEMBLY (412 HI AFT)	SCALE NTS
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D212-664-243
ASSEMBLY DETAIL E



SECTION B-B D4-2
SCALE 4X



SECTION A-A C6-2
SCALE 4X

RELEASED
2009-10-28
NRP

DESIGN	PH	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	P	DRAWING NO.	REV. E
MFG. APPR.	DS	D412-664-243	SHEET 2 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.	HL	CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	09.09.30	<small>COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

8 7 6 5 4 3 2 1

D

C

B

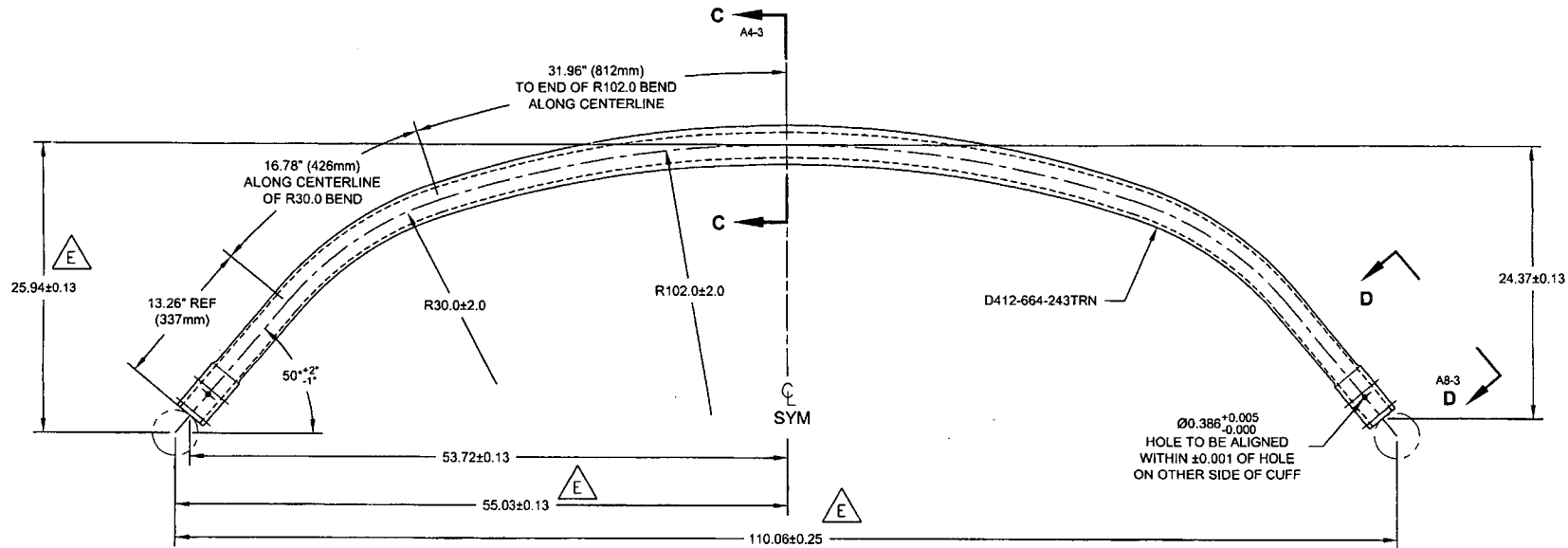
A

D

C

B

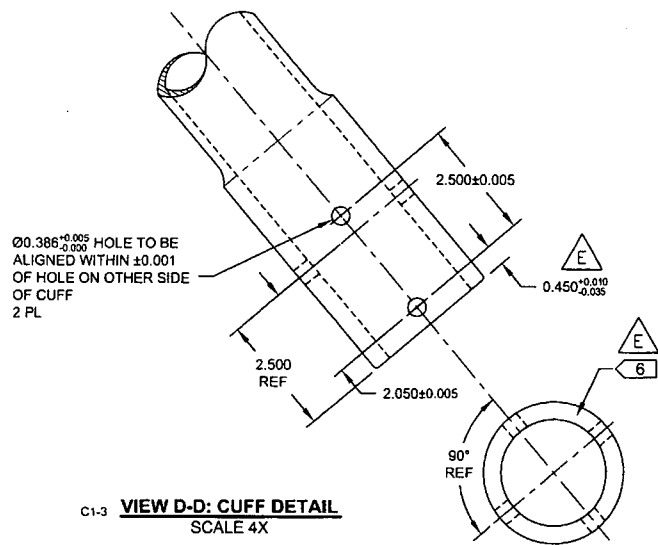
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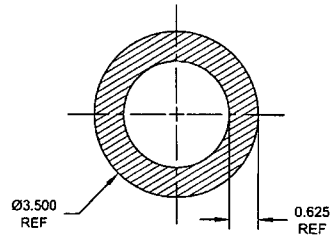
D412-664-603 10 E
BENDING AND DRILLING DETAIL

W/0 0134

RELEASED
 2009-10-29
MP



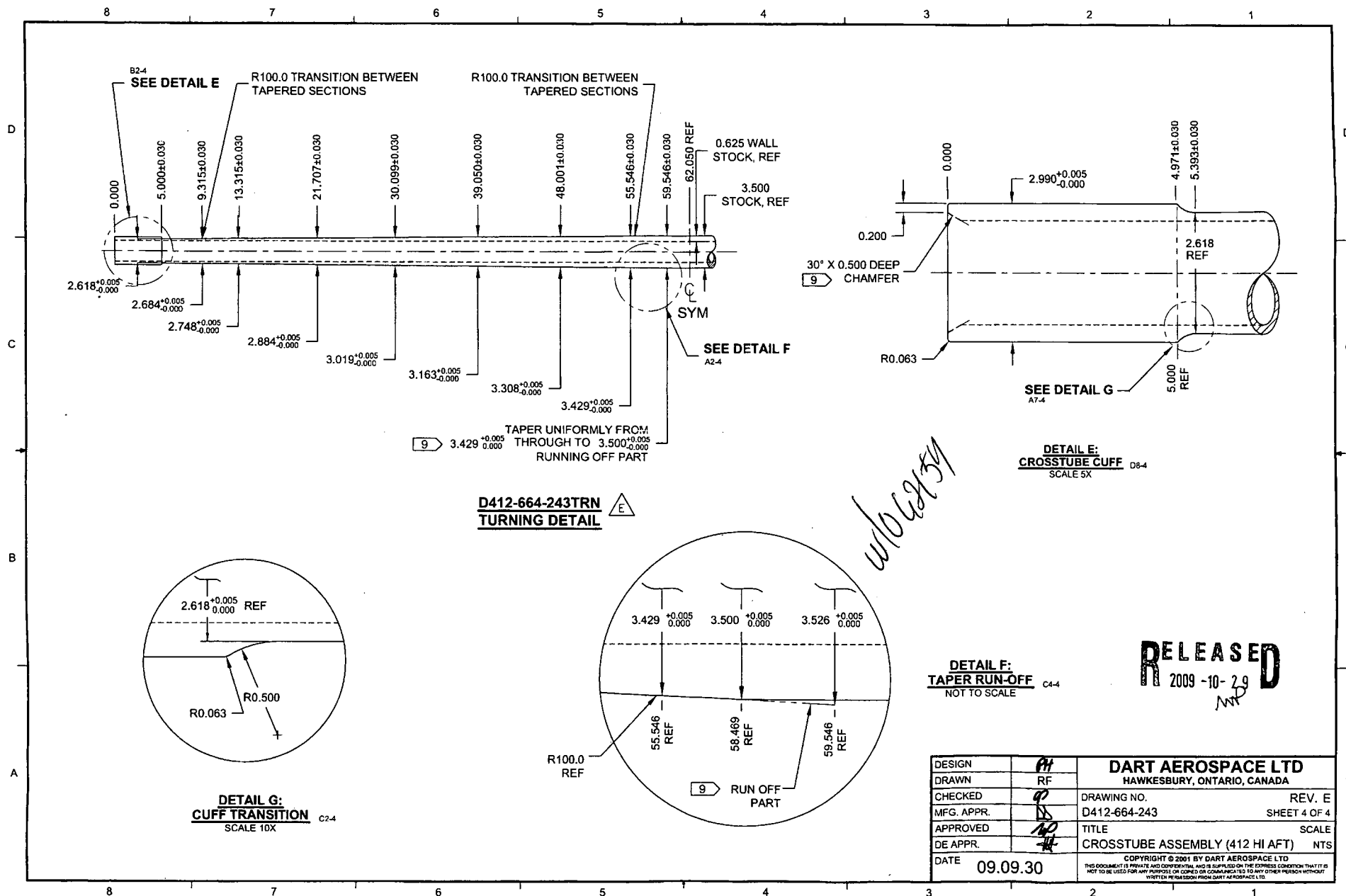
VIEW D-D: CUFF DETAIL
 SCALE 4X



SECTION C-C D5-3
 SCALE 4X

DESIGN	<i>PH</i>	DART AEROSPACE LTD	
DRAWN	<i>RF</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>Q</i>	DRAWING NO.	REV. E
MFG. APPR.	<i>DS</i>	D412-664-243	SHEET 3 OF 4
APPROVED	<i>AP</i>	TITLE	SCALE
DE APPR.	<i>H</i>	CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	09.09.30	<small>COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

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LIQUID PENETRANT TEST REPORT

P- 15195.

CLIENT	<u>DART AEROSPACE</u>	DATE	<u>OCT-6-2010</u>	PAGE	<u>1</u>	OF	<u>1</u>
ATTENTION	<u>LINDA/CHANTEL</u>	ACUREN JOB No.	<u>188-10-0905</u>	TIME	AM <input checked="" type="checkbox"/>	PM	<input type="checkbox"/>
ADDRESS	<u>1270 ABERDEEN ST.</u>	PO/NO.	<u>12703</u>				
	<u>HAWKESBURY, ON.</u>	WORK LOCATION	<u>HAWKESBURY PLANT</u>				
	<u>K6A 1K7</u>	ACCEPTANCE STD.	<u>ASTM 1417</u>	REV./DATE	<u>2005</u>		
PROJECT	<u>F.P.I. ON CROSS TUBES</u>						
ITEM(S) EXAMINED	<u>(5)</u>						

JOB DESCRIPTION	PROCEDURE No. <u>LT-0002</u>	REV./DATE	<u>-</u>	TECHNIQUE No. <u>LT-642</u>	REV./DATE	<u>-</u>
PART No.	<u>-</u>			MATERIAL	<u>ALUMINUM THICKNESS</u>	
SCOPE	<u>WET FLOUOESCENT PENE TRANT INSPECTION CARRIED OUT ON 100% EXTERNAL SURFACE</u>					

TEST DETAILS					
METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND	<u>NASNAFLUX</u>		BLACK LIGHT S/N	<u>16459</u>	<input type="checkbox"/> OUTPUT > 1000 μ W/cm ²
PENETRANT	<u>2LG7</u>	MINIMUM DWELL TIME	<u>45</u>	MIN.	<input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER	<u>H2O</u>	MINIMUM DRY TIME	<u>>10</u>	MIN.	OTHER <u>LAB. NO</u>
DEVELOPER	<u>SK052</u>	MINIMUM DWELL TIME	<u>10</u>	MIN.	LIGHT METER S/N <u>1098866</u> CAL DUE DATE <u>OCT-19 2010</u>
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY		

TEST SURFACE					
SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input checked="" type="checkbox"/> AS WELDED	<input type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/ 20°F	<input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F	<input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F	<input type="checkbox"/> > 52°C/125°F	

RESULTS- (<input type="checkbox"/> METRIC <input checked="" type="checkbox"/> IMPERIAL)	
1 - CROSS TUBE - W.O. 61069 ✓	
1 - CROSS TUBE - W.O. 62144 ✓	
1 - CROSS TUBE - W.O. 62145 ✓	
1 - CROSS TUBE - W.O. 62153 ✓	
1 - CROSS TUBE - W.O. 62154 ✓	
<u>10-10-07</u>	

Scope of Services
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES			
CLIENT REPRESENTATIVE	<u>Matthew Murdoch</u>	DTR #	<u>E63395</u>
TECHNICIAN (SIGNATURE):	<u>Mike Johnston</u>	REPORT REVIEWED BY:	
NAME (PRINT):	<u>Mike Johnston</u>	NAME	INITIALS
CGSB LEVEL	<u>1st TECHNICIAN</u>	CGSB LEVEL	<u>2nd TECHNICIAN</u>
CGSB REG. No	<u>6606</u>	CGSB REG. No	